Quiz 1

Math 17B - UCD (Spring 2012) Name

No notes or calculators. You can leave an answer as a numerical expression without computing the final value. For example, this is a perfectly acceptable answer : $((250-63)/(1-e^{(-6*3.5)})) * ln(27/168)$. Show your work clearly !!

1. Find the *general* antiderivatives for the following functions.

(a) **(1 pt)** $x^2 - \frac{2}{x^2} + \frac{5}{x^3}$.

$x^3 + \frac{2}{x} - \frac{5}{2x^2} + C$

(b) **(1 pt)** $\frac{x^3+5}{x}$. $= x^2 + \frac{5}{x}$

A.D. $= \frac{x^3}{3} + 5\ln|x| + C$

(c) **(2 pt)** $e^x + 6 - sec^2(5x)$.

$e^x + 6x - \frac{1}{5}\tan(5x) + C$

(d) **(2 pt)** $-3sin(\frac{\pi}{3}x) + 4cos(-\frac{\pi}{4}x)$.

$+\frac{9}{\pi}\cos\left(\frac{\pi}{3}x\right) - \frac{16}{\pi}\sin\left(-\frac{\pi}{4}x\right) + C$

2. **(2 pt)** Find the *particular* antiderivative for the following : $\frac{dy}{dx} = 3x^2$, such that $y = 1$ when $x = 0$.

General A.D. $= x^3 + C$.

$1 = 0^3 + C \Rightarrow C = 1$

$\Rightarrow$ Particular A.D. $= x^3 + 1$

3. **(2 pt)** Express $\frac{1}{\sqrt{3}} + \frac{1}{\sqrt{4}} + \frac{1}{\sqrt{5}} + \frac{1}{\sqrt{6}} + \frac{1}{\sqrt{7}} + \frac{1}{\sqrt{8}}$ using the sigma notation.

$\sum_{k=3}^{8} \frac{1}{\sqrt{k-1}}$